

Sample presentation in ^{14}C -AMS for biomedical research

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^{14}C samples for biomedical and environmental research continue to be measured at rates up to 300 per day on the one day per week that the CAMS spectrometer is available to us. The high demand and low spectrometer availability encourage the use of high output graphite as our sample presentation method. The sealed-tube reduction of CO_2 over zinc and titanium hydride on a cobalt catalyst is a reliable way to prevent sample-to-sample contamination and to retain the possibly high ^{14}C concentration in a sealed or low-vapor-pressure form to avoid contaminations in the spectrometer building. We report on further performance parameters of this presentation mode, including a variable fraction of very high ^{14}C concentration that occasionally appears at the start of many measurements. In pursuit of mating biochemical separation instruments to AMS, we have studied memory effects in a GC-type carbon analyzer and in a room-temperature CO_2 adsorption material. Procedures are described for biological materials that we have found difficult to handle, such as urines with highly variable carbon contents.

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